



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/662,340 | 09/16/2003 | Junji Kobayashi | H64-154706M/MNN | 9314 |
| 21254 | 7590 | 07/13/2005 | EXAMINER | |
| MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817 | | | DOTE, JANIS L | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1756 | |

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,340

Applicant(s)

KOBAYASHI ET AL.

Examiner

Janis L. Dote

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1756

1. The examiner acknowledges the amendments to claims 1 and 3-5, and the addition of claims 6-19 set forth in the amendment filed on Apr. 14, 2005. Claims 1-19 are pending.

The "Amendment to the specification" section filed on Apr. 14, 2005, was not entered because it is a duplicate of the "Amendment to the specification" section, filed on Dec. 9, 2004, which has already been entered.

2. The "Amendment to the claims" section filed on Dec. 9, 2004, does not comply with 37 C.F.R. 1.121 for the reasons discussed in the "Notice of Non-compliant Amendment" mailed on Mar. 28, 2005. Accordingly, it has not been entered.

3. The examiner notes that the "Remarks" section filed on Apr. 14, 2005, is a duplicate of the "Remarks" section filed on Dec. 9, 2004. Accordingly, the examiner will refer only to the "Remarks" section filed on Dec. 9, 2004, when answering applicants' arguments.

4. Newly submitted claims 16 and 17 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Art Unit: 1756

I. The originally filed invention, now covered by claims 1-15, 18, and 19, is drawn to a toner and an apparatus comprising said toner, which are classified in class 430, subclass 108.4+, and class 399, subclass 252, respectively.

II. The invention in claims 16 and 17 is drawn to a wax comprising a plurality of wax components, which is classified in class 106, subclass 270.

Inventions II and I are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful to make a crayon or a lubricant for skis, and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. In the instant case, the intermediate product, i.e., the waxes, is usually uniformly dispersed in the fixing resin of the toner particles. Therefore, the wax loses its identity by dissolving in the toner particles, i.e., the final product. Should applicants traverse on the ground that the species are not patentably distinct, applicants should submit evidence or identify such evidence now

Art Unit: 1756

of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

Since applicants have received an action on the merits for the originally presented invention, that invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 16 and 17 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

5. The objection to the specification set forth in the office action mailed on Sep. 22, 2004, paragraph 2, item (1), has been withdrawn in response to the amended paragraph filed on Dec. 9, 2004, beginning at page 29, line 12, of the specification.

Art Unit: 1756

The objection to the specification set forth in the office action mailed on Sep. 22, 2004, paragraph 3, has been withdrawn in response to the amendment filed on Apr. 14, 2005, to claim 3.

The rejection of claims 1-5 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Sep. 22, 2004, paragraph 6, has been withdrawn in response to the amendments filed on Apr. 14, 2005, to claims 1 and 5.

The rejection of claim 5 under 35 U.S.C. 102(b) over US 6,447,968 B1 (Ohno'968) set forth in the office action mailed on Sep. 22, 2004, paragraph 10, has been withdrawn in response to the amendment to claim 5, filed on Apr. 14, 2005, which now requires that the apparatus comprise a particular toner. Ohno'968 does not disclose or suggest an apparatus comprising the toner recited in the instant claim.

The rejections of claims 1-3 under 35 U.S.C. 102(b) over US 5,364,722 (Tanikawa) and of claim 4 under 35 U.S.C. 102(b)/103(a) over Tanikawa, set forth in the office action mailed on Sep. 22, 2004, paragraphs 11 and 12, respectively, have been withdrawn in response to the amendment filed on Apr. 14, 2005, to claim 1, adding the limitation that the wax comprises a plurality of waxes satisfying formulas (1) to (3). Tanikawa does not disclose or suggest a toner comprising a plurality of waxes as recited in the instant claims.

Art Unit: 1756

The rejection of claims 1, 2, 4, and 5 under 35 U.S.C. 102(b) over US 2001/0033993 A1 (Ohno'983) set forth in the office action mailed on Sep. 22, 2004, paragraph 13, has been withdrawn in response to the amendments to claims 1 and 5, adding the limitation that the wax comprises a plurality of waxes satisfying formulas (1) to (3). Ohno'983 does not disclose or suggest a toner comprising a plurality of waxes as recited in the instant claims.

6. The amendment filed on Dec. 9, 2004, is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The amended paragraph beginning at page 29, line 12, of the specification, states that the toner comprises 84 wt% of the styrene-acryl copolymer resin.

The originally filed specification at page 29, line 12, discloses that the toner components comprise "85 wt%" of the styrene-acryl copolymer resin, 1 wt% of a charge control agent, 10 wt% of a carbon black, 4.5 wt% of a polyethylene wax, and 0.75 wt% of a paraffin wax.

Art Unit: 1756

There is no evidence on the present record showing that the amount of the styrene-acryl copolymer is 84 wt% as stated in the amended paragraph.

Applicants are required to cancel the new matter in the reply to this Office Action.

7. The disclosure is objected to because of the following informalities:

(1) The use of trademarks, e.g., Henschel mixer [sic: HENSCHEL MIXER] in the amended paragraph filed on Dec. 9, 2004, beginning at page 32, line 5, of the specification, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner that might adversely affect their validity as trademarks.

(2) The misspelling "polytetrafluoroehene" in the amended paragraph filed on Dec. 9, 2004, beginning at page 26, line 7, of the specification, should be corrected to read "polytetrafluoroethylene."

Art Unit: 1756

Appropriate correction is required.

Applicants' arguments filed on Dec. 9, 2004, with respect to item (1) above have been fully considered but they are not persuasive.

Applicants assert that the amendment to the specification filed on Dec. 9, 2004, overcomes the objection. That amendment, however, did not capitalize all the trademarks disclosed in the specification. Accordingly, the objection stands.

8. Claim 11 is objected to because of the following informalities:

The misspelling "polyvinylbutaryl" (emphasis added) should be corrected to read "polyvinylbutyral."

Appropriate correction is required.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-15, 18, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to

Art Unit: 1756

particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 5, 18, and 19 are indefinite in the phrase "T_n (°C) comprises an onset temperature of an absorbed heat quantity curve of a wax component N in a differential scanning calorimeter (DSC)" (emphasis added) because it is not clear what applicants intend the phrase to mean. The parameter "T_n" is defined in the instant specification at page 8, lines 15-17, as "an onset temperature of a wax constitutive component N in a differential scanning calorimeter (DSC)." It is not clear whether the instant claims are defining the parameter T_n to be the onset temperature, as defined in the originally filed specification, or to be a parameter that "comprises" more than the onset temperature of a wax component. It is also not clear how the onset temperature T_n of a wax component can have more than one value.

Claims 1, 5, 18, and 19 are indefinite in the phrase "K comprises a number of said wax components" (emphasis added) because it is not clear how the number K, which represents the total number of wax components present in the wax, can have more than a single value.

Claims 1, 5, 18, and 19 are indefinite in the phrase "W_n(wt%) comprises a compound rate occupied in said wax"

Art Unit: 1756

(emphasis added) because it is not clear what is meant by the phrase. The originally filed specification at page 8, lines 17-18, defines the parameter "Wn (wt%)" as "a compound rate [sic] occupied in an overall wax." In other words, in view of the disclosure in the originally filed specification, Wn(wt%) refers to the weight percentage of a wax component present in the wax based on the total amount of wax used in the toner. See page 29, lines 20-22, of the specification, which discloses that the wax compound weight ratios of the polyethylene wax and the paraffin wax is 85 wt% and 15 wt%, respectively, based on 100 wt% of wax. From the formula (3) recited in the instant claims, the parameter Wn (wt%) represents the weight percentage of a wax component. It is not clear how the wax component "n" can be present in more than one weight percentage.

Claim 5 is further indefinite in the phrase "an electrostatic charge image developing toner which forms said image" (emphasis added) because it is not clear how the toner forms an electrostatic latent image, when claim 5 already recites that the developing unit develops the electrostatic latent image.

Claim 9 is indefinite in the phrase "natural wax comprises at least one of animal wax, mineral wax and petroleum wax" (emphasis added) because it is not clear whether claim 9

Art Unit: 1756

requires that the natural wax comprise only one of the three recited components or all three of the recited components. In colloquial English, the phrase "at least one of A . . . and Z" can be read as being met by any one of A . . . Z. More formally, if only one element is required, one might write "at least one of A . . . or Z." Or if all elements are required, one might write "at least one each of A . . . Z."

Claim 10 is indefinite in the phrase "synthetic wax comprises at least one of a Fischer-Tropsch wax and polyethylene wax" (emphasis added) because it is not clear whether claim 10 requires that the synthetic wax comprise only one of the two recited components or both.

Claim 11 is indefinite in the phrase "said fixed resin comprises at least one of a homopolymer of styrene . . . and petroleum resin" (emphasis added) for lack of unambiguous antecedent basis for the term "fixed resin" in claim 1, from which claim 11 depends. Claim 1 recites "a fixing resin," not a fixed resin. Moreover, it is not clear what is meant by the term "fixed resin," which is not defined in the instant specification. The phrase is further indefinite because it is not clear whether claim 11 requires that the "fixed resin" comprise only one of the recited members in the Markush group or all of the recited members.

Claim 12 is indefinite in the phrase "said fixed resin comprises at least one of styrene copolymer and polyester resin" (emphasis added) for lack of unambiguous antecedent basis in claim 1 for the reasons discussed supra for claim 11. The phrase is further indefinite because it is not clear whether claim 12 requires that the "fixed resin" comprise only one of the two recited resins or both.

Claim 13 is indefinite in the phrase "plurality of wax components comprise at least one of polyethylene wax, a paraffin wax, alpha olefin wax and a Fischer-Tropsch wax" (emphasis added) because it is not clear whether claim 13 requires that the plurality of waxes comprise only one of the four recited resins or all four of the recited waxes.

Claim 15 is indefinite because it is not clear what is meant by the phrase "a rationalized molecular weight distribution by optimizing an amount of said molecular weight included in said wax." The instant specification at page 11, lines 14-20, does not define the term "rationalized molecular weight distribution." The phrase is further indefinite because it is not clear to what component the molecular weight in the optimized amount refers, e.g., the lower molecular weight wax or the higher molecular weight wax.

Claims 18 and 19 are further indefinite in the phrase

Art Unit: 1756

"[t]he electrostatic charge image developing toner according to claim 16" for lack of unambiguous antecedent basis. Claim 16 is drawn to a wax, not to a toner. It is not clear from what claim applicants intend for claims 18 and 19 to depend.

Claim 19 is also indefinite in the phrase "the fixing resin comprises . . ." (emphasis added) for lack of antecedent basis in claim 16, from which claim 19 depends. As discussed supra, claim 16 is drawn to a wax. Claim 16 does not recite the presence of a fixing resin.

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1-15, 18, and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

Art Unit: 1756

inventor(s), at the time the application was filed, had possession of the claimed invention.

(1) Claims 1, 5, 18, and 19 recite that "T_n (°C) comprises an onset temperature of an absorbed heat quantity curve of a wax component N in a differential scanning calorimeter (DSC)" (emphasis added).

The originally filed specification does not provide an adequate written description of the parameter T_n. The originally filed specification at page 8, lines 15-17, defines the parameter "T_n" as "an onset temperature of a wax constitutive component N in a differential scanning calorimeter (DSC)." The originally filed specification does not disclose that the parameter T_n comprises more than the onset temperature of a wax component as recited in the instant claims.

(2) Claim 2 recites that the wax, which comprises a plurality of wax components, has a melting point in a range of 50 to 120°C in a DSC curve.

The originally filed specification does not provide an adequate written description of said wax. The originally filed specification at page 12, lines 5-6, discloses that a wax, not the wax mixture, has a melting point in a range of 50 to 120°C. The originally filed specification refers to a wax mixture as comprising more than one wax. See the originally filed

specification at page 11, lines 14-20, and page 13, lines 12-13. Table 1 at page 37 in the originally filed specification reports that the individual waxes have melting points that are within the range of 50 to 120°C, not the mixture of waxes.

(3) Claims 3 and 18 recite that the wax, which comprises a plurality of wax components, comprises a crystallinity of greater than 85% and less than 93%.

The originally filed specification does not provide an adequate written description of said wax. The originally filed specification at page 12, lines 2-3, discloses that a wax, not the wax mixture, has a crystallinity of greater than 85% and less than 93%. The originally filed specification refers to a wax mixture as comprising more than one wax. See the originally filed specification at page 11, lines 14-20, and page 13, lines 12-13. Table 1 at page 37 in the originally filed specification reports the crystallinities of the individual waxes, not of the mixture of waxes.

(4) Claim 6 recites that the "wax comprises 0.5 wt% to 10 wt% of the electrostatic charge image developer toner."

Claim 7 recites that the "wax comprises 3.0 wt% to 6.0 wt% of the electrostatic charge image developer toner."

The originally filed specification does not provide an adequate written description of said amounts. The originally

Art Unit: 1756

filed specification at page 14, lines 1-5, discloses that the wax can be present in an amount of 0.5 to 10 wt%, preferably 3.0 to 6.0 wt%, "with respect to the total amount of the fixing resin and the wax," not to the toner as recited in instant claims 6 and 7.

(5) Claims 8-10 recite that the plurality of wax components comprises one of a natural wax and a synthetic wax.

The originally filed specification does not provide an adequate written description of said plurality of wax components. The originally filed specification at page 15, lines 19-20, discloses that the "wax can be obtained from the natural wax or the synthetic wax." Examples 1 and 2 exemplify two particular wax mixtures comprising a particular polyethylene wax and a particular paraffin wax that have particular crystallinities and melting points. The two particular wax mixtures do not provide an adequate written description for the broader species recited in the instant claims.

(6) Claim 13 recites that the plurality of wax components comprises "at least one . . . alpha olefin wax."

The originally filed specification does not provide an adequate written description of said alpha olefin wax. The originally filed specification at page 15, lines 19-23, discloses that the "wax can be obtained from the natural wax or

Art Unit: 1756

the synthetic wax," where the synthetic wax can be a Fischer-Tropsch wax or polyethylene wax. Example 3 exemplifies a particular alpha-olefin wax that has a particular crystallinity and melting point. The one particular alpha-olefin wax does not provide an adequate written description for the broader species of alpha-olefin wax recited in the instant claim.

(7) If claims 9, 10 and 13 require that the plurality of wax components comprises all of the recited waxes, the claims are rejected for the following reasons.

The originally filed specification does not provide an adequate written description of said plurality of wax components. The originally filed specification at page 15, lines 19-20, discloses that the "wax can be obtained from the natural wax or the synthetic wax." The originally filed specification at page 15, lines 20-23, discloses that the synthetic wax can be a Fischer-Tropsch wax or a polyethylene wax and that the natural wax can be an "animal/plant wax," mineral wax or a petroleum wax. Examples 1 and 2 exemplify two particular wax mixtures comprising a particular polyethylene wax and a particular paraffin wax that have particular crystallinities and melting points. The originally filed specification does not disclose a plurality of waxes comprising all of the waxes recited in instant claims 9, 10, and 13.

(8) Claim 15 recites that the wax comprises "a rationalized molecular weight distribution by optimizing an amount of said molecular weight included in said wax."

The originally filed specification does not provide an adequate written description of said wax. The originally filed specification at page 11, lines 14-20, discloses that a wax mixture "whose the molecular weight distribution is rationalized by combining the waxes, whose molecular weight distribution is rationalized by containing appropriately the low molecular weight components, or waxes, which have the narrow the molecular weight distribution, with each other to the toner" (emphasis added). The originally filed specification does not recite optimizing an amount of the broadly recited "said molecular weight included in said wax" in instant claim 15.

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United

Art Unit: 1756

States and was published under Article 21(2) of such treaty in the English language.

14. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

15. In the interest of compact prosecution, the examiner has interpreted the parameters T_n , K , and W_n in claims 1, 5, 18, and 19 as referring to the onset temperature of the wax component "n," the total number of wax components present in the wax, and as the weight percentage of the wax component "n" present in the wax based on the total amount of wax used in the toner.

The examiner has interpreted the claim language in claims 9, 10, 11, 12, and 13 as requiring only one of the recited components.

The examiner has interpreted the claim limitation in claim 15 as being met by any combination of waxes that comprises waxes having different molecular weights.

Rejections based on these interpretations are set forth infra.

Art Unit: 1756

16. Claims 1, 2, 5, 6, 8, 9, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,605,778 (Onuma), as evidenced by Schaffert, Electrophotography, page 604, Fig. 248.

Onuma discloses a toner comprising 100 parts by weight of styrene-n-butyl acrylate binder resin 1 and 4 parts by weight of a wax mixture comprising a plurality of waxes. The wax mixture comprises paraffin wax J and polypropylene wax K, in a weight ratio of 1:1. Col. 18, lines 50-58; col. 18, line 62, to col. 19, line 8; col. 19, lines 25-44; example 9 at col. 21, lines 55-58; and Table 2, example 9. Onuma further discloses an image forming apparatus - a commercially available electrophotographic copying machine NP-4835 manufactured by Canon K.K., which comprises an OPC (organic photoconductor) photosensitive drum, i.e., an electrostatic charge holding member, and the toner in example 9. Col. 19, line 62, to col. 20, line 12. Although Onuma does not explicitly disclose that the apparatus comprises a developing unit, it is well-known in the electrophotographic arts that commercially available electrophotographic copying machines comprise a developing unit. See Schaffert, Electrophotography, page 604, Fig. 248, which shows the schematic diagram of a XEROX 914 copier. Thus, the Onuma image forming apparatus comprises a developing device unit as recited in instant claim 5.

The wax mixture in the example 9 toner is present in the amount of 2.1 wt% based on the weight of the toner, which is within the ranges of 0.5 to 10 wt% based on the weight of the toner recited in instant claim 6. The amount 2.1 wt% was determined from the information provided at col. 19, lines 25-44. The styrene-n-butyl acrylate binder resin meets the fixing resin limitation recited in instant claims 11 and 12. The wax mixture has a melting point that is within the range of 50 to 120°C recited in instant claim 2. See Table 2, example 9. Paraffin wax J and polypropylene wax K meet the wax compositional limitations recited in instant claims 8, 9, and 13. Paraffin wax J exhibits an onset temperature of heat absorption (T_n) in a DSC curve at 54°C. Polypropylene wax K exhibits an onset temperature of heat absorption in a DSC curve at 133°C. See Table 1 at col. 23, waxes J and K. The Onuma toner in example 9 satisfies formulas (1) to (3) recited in instant claims 1 and 5. "T" in formula (1) is 93.5°C (i.e., $[54^\circ\text{C} \times 50 \text{ wt}\% + 133^\circ\text{C} \times 50 \text{ wt}\%]/100 \text{ wt}\%$). The "T" value of 93.5°C is greater than 56, so the inequality in formula (2) is satisfied.

Art Unit: 1756

17. Claims 4 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Onuma.

Onuma discloses a toner as described in paragraph 16 above, which is incorporated herein by reference. As discussed in paragraph 16, the toner disclosed by Onuma comprises a styrene-n-butyl acrylate binder resin. The binder resin meets the fixing resin composition limitation "at least a vinyl copolymer" recited in instant claim 4.

Instant claims 4 and 19 are written in product-by-process format. Claims 4 and 19 recite that the vinyl copolymer "is polymerized in existence [sic] of the wax." Onuma does not exemplify making a toner as recited in instant claims 4 and 19. Rather, the toner in example 9 of Onuma is obtained by melt-kneading a mixture comprising the binder resin and the waxes in an extruder, cooling the melted mixture, pulverizing the cooled mixture, and classifying the pulverized composition to obtain toner particles. See example 9. However, as discussed above, the Onuma toner meets the compositional limitations recited in instant claims 4 and 19. Accordingly, the Onuma toner appears to be the same or substantially the same as the toner recited in instant claims 4 and 19. The burden is on applicants to prove

Art Unit: 1756

otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

18. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onuma.

Onuma discloses a toner as described in paragraph 16 above, which is incorporated herein by reference. As discussed in paragraph 16 above, the toner comprises 2.1 wt% of the wax mixture, or 4 wt. parts per 100 wt. parts of binder resin. The wax mixture comprises paraffin wax J and polypropylene wax K.

Onuma does not exemplify a toner comprising a wax mixture in the amount of 3.0 to 6.0 wt% based on the weight of the toner recited in instant claim 7.

However, Onuma teaches that wax mixture may be present in an amount of 0.2 to 20 wt. parts, particularly 0.5 to 10 wt. parts, per 100 wt. parts of binder resin. Col. 6, lines 56-59. In particular, when the amount of the wax mixture in the example 9 toner is adjusted to 10 wt. parts per 100 wt. parts of binder resin, the wax mixture is present in an amount of 5.2 wt% based on the total weight of the toner.

Onuma teaches that in the wax mixture, paraffin wax J, the wax having a half-width termination temperature of a heat absorption peak in a temperature region of 60-100°C on a DSC

Art Unit: 1756

curve on temperature increase, may be preferably used in an amount of 0.1 to 15 wt. parts, more preferably 0.5 to 10 wt. parts, per 100 wt. parts of binder resin. Col. 6, lines 35-40 and 42-45; and Table 1, wax J, which has a half-width termination temperature at 63°C. Onuma teaches that polypropylene wax K, the wax having a half-width initiation temperature of a heat absorption peak in a temperature region of 90-140°C on a DSC curve on temperature increase, may be preferably used in an amount of 0.1 to 12 wt. parts, more preferably 0.5 to 10 wt. parts, per 100 wt. parts of binder resin. Col. 6, lines 40-42 and 45-48; and Table 1, wax K, which has a half-width initiation temperature at 134°C. According to Onuma, when the two waxes are present in the above amounts, "it is possible to effectively improve the low-temperature fixability and the anti-offset characteristic without impairing the anti-blocking resistance." Col. 6, lines 51-54.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Onuma, to adjust, through routine experimentation, the amounts of paraffin wax J and polypropylene wax K in the example 9 toner of Onuma, such that that the total amount of the wax mixture is 10 wt. parts per 100 wt. parts of binder resin, i.e., 5.2 wt% based on the weight of the toner, which is within the range of 3.0 to 6.0 wt%

Art Unit: 1756

based on the weight of the toner recited in instant claim 7, wherein the weight ratio of paraffin wax J to polypropylene wax K remains as 1:1 and the amount of each wax is within the preferable Onuma ranges of 0.5 to 10 wt. parts per 100 wt. parts of binder resin. That person would have had a reasonable expectation of successfully obtaining a toner that has improved low-temperature fixability and anti-offset characteristic and sufficient anti-blocking resistance as disclosed by Onuma.

19. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onuma.

Onuma discloses a toner as described in paragraph 16 above, which is incorporated herein by reference. As discussed in paragraph 16 above, the toner comprises the wax mixture comprising paraffin wax J and polypropylene wax K.

Onuma does not exemplify a wax mixture comprising paraffin wax J and a polyethylene wax as recited in instant claim 10.

Onuma teaches that the wax mixture provides a DSC curve on temperature increase, "showing a minimum onset temperature of heat absorption of at least 50°C and at least two heat absorption peaks including a largest peak and a second largest peak of which a lower temperature peak P₁ and a higher temperature peak P₂ have a peak temperature difference of at least 15°C, the

Art Unit: 1756

lower temperature peak P_1 shows a half-width of at most 20°C between a lower half-width temperature L_1P and a higher half-width temperature H_1P , and the higher temperature peak P_2 shows a half-width temperature of at most 20°C between a lower half-width temperature L_2P and a higher half-width temperature H_2P , satisfying $L_2P - H_1P \geq 5^{\circ}\text{C}$." Col. 2, lines 37-54. According to Onuma, when the wax mixture meets the above requirements, the toner has excellent low-temperature fixability, anti-offset characteristics, and anti-blocking characteristics. Col. 2, lines 14-22. Onuma teaches that a wax mixture satisfying the above requirements may comprise a low-melting point wax for giving the lower temperature peak P_1 and a high-melting point wax for giving the higher temperature peak P_2 . The low temperature peak P_1 preferably is in the temperature range of $55-90^{\circ}\text{C}$ and has a half-width of at most 20°C ; while the higher temperature peak P_2 preferably is in the temperature range above 90 to 150°C and has a half-width of at most 20°C . The low-melting wax and the high-melting wax preferably show a difference in maximum heat absorption peak temperature "between $15-95^{\circ}\text{C}$. . . in view of function separation." Col. 7, line 66, to col. 8, line 21.

Onuma teaches that polypropylene wax K , which is the higher-melting point wax in the wax mixture in example 9, may equally be a polyethylene wax. Col. 4, lines 50-51; col. 18,

Art Unit: 1756

lines 37-51; and Table 1, wax E, which is obtained by polymerizing ethylene in the presence of a Ziegler catalyst. Polyethylene wax E exhibits an onset temperature at 100°C, and has a maximum absorption peak temperature of 124°C having a half-width of 18°C. See Table 1, wax E. Paraffin wax J, which is the low-melting point wax in example 9, exhibits an onset temperature at 54°C, and has a maximum absorption peak temperature of 62°C having a half-width of 3°C. See Table 1, wax J. The difference in maximum heat absorption peak temperatures is 62°C, which is within the range of "between 15-95°C." Thus, polyethylene wax E and polyethylene wax J meet the preferred Onuma requirements for the higher-melting point and lower-melting point waxes.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Onuma, to use a polyethylene wax, such as polyethylene wax E, in place of polypropylene wax K in the example 9 toner of Onuma, such that the combination of the polyethylene wax with paraffin wax J satisfies the wax mixture requirement disclosed by Onuma. That person would have had a reasonable expectation of successfully obtaining a toner that has excellent low-temperature fixability, anti-offset characteristic, and anti-blocking resistance as disclosed by Onuma.

Art Unit: 1756

The wax mixture comprising paraffin wax J and polyethylene wax E in a weight ratio of 1:1 satisfies formulas (1) to (3) recited in instant claim 1. "T" in formula (1) is 77°C (i.e., $[54^{\circ}\text{C} \times 50 \text{ wt\%} + 100^{\circ}\text{C} \times 50 \text{ wt\%}]/100 \text{ wt\%}$). The "T" value of 77°C is greater than 56, so the inequality in formula (2) is satisfied.

20. Claims 1, 6, and 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,808,851 B2 (Bartel), as evidenced by US2003/0049552 A1 (Fields) and US 6,849,371 B2 (Sacripante).

Bartel discloses a toner comprising 81 wt% of a styrene-butyl acrylate copolymer and 9 wt% of a wax mixture based on the weight of the toner. The wax mixture comprises about 75 wt% of the polyethylene wax associated with the tradename POLYWAX 725 and 25 wt% of the polyethylene wax associated with the tradename POLYWAX 1000. Col. 12, lines 60-61; Example VI at col. 20; and col. 21, lines 11-14. The amount of 9 wt% of the wax mixture based on the weight of the toner is within the range of 0.5 to 10 wt% based on the weight of the toner recited in instant claim 6. POLYWAX 725 and POLYWAX 1000 meet the wax limitation recited in instant claim 13. The styrene-n-butyl acrylate copolymer binder resin meets the fixing resin limitation recited in instant claims 11 and 12.

Art Unit: 1756

Bartel identifies POLYWAX 725 as a low molecular weight wax and POLYWAX 1000 as a high molecular weight wax. Col. 15, lines 12-15. Thus, POLYWAX 725 and POLYWAX 1000 meet the wax limitations of a low molecular weight wax and a wax having a "molecular weight which is higher than a molecular weight of said low molecular weight wax," respectively, recited in instant claim 14.

Bartel discloses that POLWAX 725 has a melting point determined by DSC of about 108°C. Col. 14, lines 2-3. The prior art discloses that POLYWAX 1000 exhibits an onset temperature in a DSC curve at 65.1°C; and that POLYWAX 725 exhibits an onset temperature of about 80°C. See Fields, Table 4 at page 6, POLYWAX 1000; and Sacripante, col. 12, lines 46-48. The Bartel toner in example IV satisfies formulas (1) to (3) recited in instant claim 1. "T" in formula (1) is 76.3°C (i.e., $[65.1^{\circ}\text{C} \times 25 \text{ wt\%} + 80^{\circ}\text{C} \times 75 \text{ wt\%}]/100 \text{ wt\%}$). The "T" value of 76.3°C is greater than 56, so the inequality in formula (2) is satisfied.

21. Claim 15 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bartel, as evidenced by Fields and Sacripante.

Art Unit: 1756

Bartel, as evidenced by Fields and Sacripante, discloses a toner as described in paragraph 20 above, which is incorporated herein by reference.

Bartel does not disclose that its wax mixture "comprises a rationalized molecular weight distribution by optimizing an amount of said molecular weight included in said wax" as recited in instant claim 15. However, as discussed supra, the Bartel wax mixture comprises a low molecular weight wax and a wax "having a molecular weight higher than that of the low molecular weight wax" as recited in instant claim 14. For the reasons discussed in paragraph 15, the Bartel wax mixture meets the "rationalized molecular weight distribution" recited in instant claim 15.

Furthermore, the Bartel toner is obtained by an emulsion-aggregation method. According to Bartel, when the toner is obtained by the emulsion aggregation method, the less wax protrusions are observed on the toner particles when the molecular weight of the wax is increased. Col. 13, line 63, to col. 14, line 32. Bartel teaches that "increasing the molecular weight of the wax to decrease wax protrusions on toner particles, however, may result in the loss of some desired toner properties," e.g., the minimum fixing temperature of the toner is increased. Col. 14, lines 32-35. Bartel shows in Fig. 4

Art Unit: 1756

that as the molecular weight of the wax increases, the melting point of the wax increases. This increase in melting point increases the minimum fixing temperature of the toner. Bartel discloses that "one has to determine the lowest increase in melting point of the wax [i.e., the molecular weight of the wax] that will result in a satisfactory number of wax protrusions on toner particle surfaces that will result in good particle size distribution and toner development, and accept that this will result in some increase in toner minimum fix temperature."

Col. 14, lines 36-46. Thus, it appears that Bartel recognizes that the amounts of the low molecular weight wax and the higher molecular weight wax can be optimized such that the number of wax protrusions can be reduced to a satisfactory value while maintaining a satisfactory minimum fixing temperature.

Accordingly, it is reasonable to presume that the Bartel wax mixture in example IV is "a rationalized molecular weight distribution" as recited in instant claim 15. The burden is on applicants to prove otherwise. Fitzgerald, supra.

22. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are

Art Unit: 1756

reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (571) 273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Jul. 8, 2005


JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500
1700